



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/678,720

10/03/2003

Robert C. Lam

01168/DKT00076

6119

43215

7590

02/20/2007

BORGWARNER INC.

PATENT DEPARTMENT

3850 HAMLIN ROAD

AUBURN HILLS, MI 48326-2872

EXAMINER

STEELE, JENNIFER A

ART UNIT

PAPER NUMBER

1771

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

02/20/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/678,720

Applicant(s)

LAM, ROBERT C.

Examiner

Jennifer Steele

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-9, 12, 13 and 23-29 is/are pending in the application.
- 4a) Of the above claim(s) 23-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-9, 12, 13 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**NONFINAL OFFICE ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claim 6 –13 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Lam (EP 1203897) in view of Brassell (US 4772508) and in further view of Tradewell (4444574).

Lam teaches a friction material having fibrous base impregnated with a curable resin wherein the fibrous base material comprising a porous primary layer and one secondary layer. The friction material is comprised of 10-50% of less fibrillated aramid fiber, 10-35% carbon particles, 5-20% cotton fibers, 2-15% carbon fibers and 10-35% filler material (claim 12). The Canadian Standard Freeness (CSF) index of the aramid fibers is at least 300 (claim 6). Lam teaches a porous primary layer and friction modifying

Art Unit: 1771

particles covering 3-90% of the primary layer surface area (claim 1). Lam teaches friction modifying particles that include silica particles, phenolic resins, silicone resins, epoxy resins and mixtures thereof; fully carbonized carbon powder or particles or partially carbonized powder or particles and mixtures thereof; and mixtures thereof (claim 5). Lam teaches friction modifying particles in the secondary layer including carbon particles, aramid fibers coated with carbon particles, carbon particles and a retention aid where the friction material must be resilient or elastic yet resistant to compression set, abrasion and stress, have high heat resistance and be able to dissipate heat quickly (pg 4, lines 10-13). Lam further teaches fibrillated fibres and carbon fibres that provide a friction material with improved anti-shudder characteristics, high thermal conductivity, porosity strength, and noise resistance (pg 6 lines 5-15). Lam teaches carbon fibers provide friction material with good heat conduction such that the friction material has desired heat resistance and continues to equate with carbon particles and teaches "the carbon particles also provide the friction material with good friction characteristics such as a good or smooth "feel" in shift and essentially noise or "squawk" free operation (pg 4, lines 10-13). As to claim 7 Lam teaches a less fibrillated aramid fibers of about 430 to 650 on Canadian Standard Freeness index in claim 1. As to claim 8, Lam teaches a less fibrillated aramid fibers of average fiber lengths in the range of 0.5 to 10 mm in claim 19. As to claim 9, Lam teaches a filler of diatomaceous earth in claim 20. As to claim 12, Lam teaches a friction material is comprised of 10-50% of less fibrillated aramid fiber, 10-35% carbon particles, 5-20% cotton fibers, 2-15% carbon fibers and 10-35% filler material in claim 21. As to claim 13, Lam teaches a

Art Unit: 1771

friction material is comprised of 38 to 40% of less fibrillated aramid fiber, 13-15% carbon particles, 10-12% cotton fibers, 4-6% carbon fibers and 28-30% filler material in claim 22. Lam differs from the current application and does not teach partially carbonized carbon fibers that are 65-90% carbonized in the secondary layer.

Brassell teaches a carbon bonded carbon fiber where the fiber is carbonized in order to improve the properties of the fiber and increase surface area and improve compressive strength (col. 2, lines 61-68). Brassell teaches that carbonization of carbon fibers increases the surface area of the fiber as well as its compressive strength and porosity (col. 4, lines 28-33).

Tradewell teaches a partially-carbonized carbon fibers made of polyarylonitrile.

Tradewell teaches a partially carbonized fiber containing only 61% carbonized instead of the carbonized fibers having at least 95% carbonization known in the art because the fully carbonized fibers are very stiff and lack abrasion resistance (col 2, lines 32-45).

Tradewell teaches the partially carbonized fibers are an improvement over the 95% plus carbonized fibers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the friction modifying particles comprised of carbonized powder or particles in Lam's invention with carbonized fibers motivated to increase the porosity, surface area and mechanical compression strength as taught by Brassell. It further would have been obvious to one of ordinary skill in the art at the time invention was made to employ partially carbonized carbon fibers motivated to improve abrasion resistance in a friction material taught by Tradewell.

***Terminal Disclaimer***

2. The terminal disclaimer filed on 11/07/2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/666,090 has been reviewed and is accepted. The terminal disclaimer has been recorded.
3. The terminal disclaimer filed on 11/07/2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/678,598 has been reviewed and is accepted. The terminal disclaimer has been recorded.
4. The terminal disclaimer filed on 11/07/2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 6,182,804 has been reviewed and is accepted. The terminal disclaimer has been recorded.
5. The terminal disclaimer filed on 11/07/2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/678,599 has been reviewed and the application/patent being disclaimed has been improperly identified since the number used to identify the date is disclosed as 9/29/2003 is incorrect. The correct number is 10/03/2003.

***Response to Arguments***

6. Applicant's arguments, filed 11/07/206, with respect to the rejection(s) of claim(s) 6-9, 12-13 and 29 under 35 U.S.C. 103(a) have been fully considered and are persuasive with respect to references disclosing partially carbonized carbon fibers. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brassell and Tradewell who teach carbonized carbon fibers and partially carbonized carbon fibers.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Smith (US 5965658).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Steele whose telephone number is (571) 272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1771

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
ELIZABETH M. COLE  
PRIMARY EXAMINER

1/26/2007